On describing the residential care process: social interactions between care workers and children according to the Structural Analysis of Social Behavior (SASB) model

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5 Interpersonal behaviors of children in residential care

5.1 Introduction

Whereas the previous chapter described interpersonal behaviors of residential child care workers, the present chapter describes interpersonal behaviors of children in residential care. Since children are considered as social actors who interact with their environment and modify it, interpersonal behaviors of children are as important as those of care workers.

The interpersonal behaviors of children who are admitted to living units where primarily structure is provided (referred to as STR children) and the interpersonal behavior of children who are primarily provided with emotional and affective care (referred to as EAC children) are described and, additionally, compared. Since children are allocated to one of these treatments depending on their characteristics and needs, it seems reasonable to believe that differences between interpersonal behaviors of the children reveal characteristic differences between the two types of residential living units. Interpretations about whether or not this is the case complete the comparisons between both types of children.

Paragraph 5.2 is addressed to the observed interpersonal behaviors that children show in relationship to their care workers. Paragraph 5.3 discusses by which kind of interpersonal behaviors the children react to various behaviors of the care workers. In paragraph 5.4 complex communication of the children is explored, that is interpersonal behaviors in which several interpersonal messages are entangled. Paragraph 5.5 addresses the issue of differences between individual children, irrespective of the type of care they receive. In paragraph 5.6 a summary of the results is presented.

To illustrate the different kinds of interpersonal behaviors, some examples of observed behaviors are added. These concern both verbal and nonverbal interpersonal behaviors.

5.2 Frequencies of SASB clusters

This paragraph presents frequencies of the interpersonal behaviors of children who receive residential care in terms of SASB clusters. The frequencies of the observed SASB clusters are presented and these SASB clusters are described. This section refers to subquestion 7 stated in paragraph 3.5. Next, these observed frequencies of interpersonal behaviors of both STR and EAC children are compared. This part refers to subquestion 8.

Totals
In total 14192 elements (complete verbal or nonverbal interpersonal utterances or behaviors) are coded from children in relation to their care workers. From STR children to STR care workers 8072 elements are coded. The number of uncodable elements or missing values is 187, that is 2.3%. From EAC children in relation to EAC care workers 6120 elements are
coded; 188 elements (3.1%) concern missing values. As described in paragraph 3.4, the mean number of observed interpersonal behaviors per interaction dyad is almost the same in both types of living units.

FIGURE 10: The relative frequencies of the SASB clusters of all STR children who primarily structure are provided (STR) in relation to their child care workers (n = 8072). The higher the percentage, the darker the shading of the SASB cluster.
FIGURE 11: The relative frequencies of the SASB clusters of all children who primarily receive emotional and affective care (EAC) in relation to their child care workers (n = 6120). The higher the percentage, the darker the shading of the SASB cluster.
The frequencies of the children's interpersonal behaviors are presented on the SASB surfaces. Figure 10 shows the relative frequencies of the SASB clusters of the STR children in relation to their STR care workers, whereas figure 11 shows those of EAC children in relation to their EAC care workers.

It is demonstrated that only four out of the 16 SASB clusters (cluster 2-1, 2-2, 2-4, and 2-5) count for almost 90% of all interpersonal behaviors of the children.

Figure 10 and 11 also demonstrate that the percentages of the different interpersonal behaviors of both types of children are much alike.

**Children's interpersonal behaviors with focus on self**

As shown in figure 10 and 11, the majority of the children's interpersonal behaviors is located on SASB surface 2 with focus on self (STR children in total 93.7%; EAC children in total 95.2%). The children mainly interact with behaviors that involve intransitive states that are concerned with *what is going to be done to, for or about themselves*. Since the interpersonal behaviors with focus on self are defined as prototypically characteristic of children, this is as expected.

As an overall picture of interpersonal behaviors with *focus on self*, both types of children show:

- the most SASB cluster 2-2 'disclosing and expressing';
- also to a substantial degree cluster 2-1 'asserting and separating' and cluster 2-4 'trusting and relying';
- and next to a much lesser extent cluster 2-5 'deferring and submitting';
- and to a very small extent cluster 2-3 'joyfully connecting', cluster 2-6 'sulking and scurrying', and cluster 2-8 'wallowing off and distancing';
- but never SASB cluster 2-7 'protesting and recoiling'.

Below these interpersonal behaviors are described in more detail.

So both types of children in the first place interact with cluster 2-2 'disclosing and expressing'. This means that the children are autonomy-taking or separate in a friendly way, indicating that they talk freely and openly and comfortably show their thoughts and feelings to their care workers. A few examples of these friendly expressings (cluster 2-2) of children are:

- **STR child:** (got permission to join his friend to play soccer) YES! (with hands up and a big smile)
- **STR child:** (while pointing at a picture) I already knew him when he came to live in this unit.
- **STR child:** (with a warm and firm voice, in order to convince the care worker to give permission to watch a show on television) We can stay up till nine o'clock.
- **EAC child:** I am going to make a Chinese lantern.
- **EAC child:** We sang a song for the teacher at school today.
- **EAC child:** Santa Claus is coming tomorrow, isn't he?!

Secondly, both STR and EAC children interact with cluster 2-1 'asserting and separating'. This kind of interpersonal behavior implies rather neutral but very autonomy-taking or separate behavior. The children know their own mind and speak up, or they do their own things and go their own way separately from the child care worker. Cluster 2-1 is also often seen at the end...
of a series of interchanges, when both the child and the care worker go their own separate way. Examples are:

STR child: (just got an order to hang his coat on the coat hooks) No!
STR child: (after receiving an answer to his question about what time it is) The child continues drinking his tea.
EAC child: No...I don't want to!
EAC child: The child leaves the living room to go playing outside.

In addition, children show cluster 2-4 'trusting and relying', which is friendly and submitting interpersonal behavior. In case of cluster 2-4 the children willingly accept suggestions, instructions, or explanations of the child care workers, or the children ask questions in order to learn something or to get permission to do something.

STR child: Are we allowed to stay up till nine o'clock?
STR child: Yes, next time I will remember this myself.
STR child: How do I have to use this tool?
STR child: Okay, I will go now to do my homework.
EAC child: Can I go to play with my sister?
EAC child: Yes I will wear my coat.
EAC child: (while watching a television program about the Third World) Why do those children have such a fat belly?
EAC child: Is Santa Claus coming tomorrow or not?

To a considerable lesser extent, cluster 2-5 'deferring and submitting' is observed. This represents neutral but very submitting behavior. In such cases the children give in to the child care workers and do or become or think exactly as the care workers want them to.

STR child: (as a reaction to a care worker's order to take a seat). The child silently takes a seat.
EAC child: The child stops shouting.
EAC child: The child lets go of the other child.

Finally, low frequencies of interpersonal behaviors with cluster 2-3 'joyfully connecting', cluster 2-6 'sulking and scurrying', and cluster 2-8 'walling off and distancing' are observed. 'Joyfully connecting' (cluster 2-3) means that the children are playful, happily make bodily contact, and enjoy being with the child care worker. For example:

STR child: The child hugs the care worker
STR child: The child laughs and pokes the care worker in his ribs.
EAC child: The child clammers onto the care workers lap.

In case of cluster 2-6 'sulking and scurrying' children show hostile submitting behavior. This means that the children comply, show anger, cry or whine but do what the care workers want them to do. Examples are:

STR child: (as a reaction to a care worker's order to keep waiting and with an angry look at his face) The boy heaves a deep sigh and keeps waiting.
STR child: (as a reaction to an order to go to his room till the care worker will allow him to leave it again) The child walks to his own room and says (with a crying voice): that takes hours.
EAC child: (with a complaining voice) We never are allowed to play in the hallway.
EAC child: (with a crying voice while walking to his room) I do not want to do lines in my own room.
In case of ‘wallowing off and distancing’ (cluster 2-8) the children show hostile autonomy. They do not hear and do not react much, or angrily detach from the child care worker. For example:

**STR child:** (as a reaction to a care workers question if the child understands the care worker) Without saying a word the child turns his head in opposite direction and looks at the TV.

No interpersonal behaviors of cluster 2-7 ‘protesting and recoiling’ are observed with the children. This would be very hostile behavior, like boiling over with rage or screaming and shouting about being destroyed by the other person.

**Children’s interpersonal behaviors with focus on other**

Only a small number of the interpersonal behaviors of STR children is located on SASB surface 1 with focus on other (STR children 6.3%; EAC children 4.8%), involving active behaviors directed at the care workers.

As an overall picture of interpersonal behaviors with focus on other both types of child care workers show:

- the most, but to a small extent, SASB cluster 1-5 'watching and controlling';
- to a very small extent cluster 1-4 'nurturing and protecting';
- hardly any cluster 1-1 'freeing and forgetting', cluster 1-2 'affirming and understanding', cluster 1-6 'belittling and blaming', and cluster 1-8 'ignoring and neglecting';
- and never SASB cluster 1-3 ‘loving and approaching’, and cluster 1-7 ‘attacking and rejecting’.

The most frequently observed behavior with focus on other is cluster 1-5 ‘watching and controlling’, which means that the children are demanding and try to make the care workers do what they want them to do. For example:

**STR child:** (while noticing that the care worker is talking to another child) The child loudly calls the care worker's name.

**EAC child:** Give me the keys!

Furthermore, cluster 1-4 'nurturing and protecting' is shown. In these cases children give the care workers a helping hand by explaining things or taking care of the child care worker. Examples are:

**STR child:** (who noticed that the care worker is looking for sugar to put in his coffee) The child passes the sugar bowl to the care worker.

**STR child:** (who noticed that the care worker is a bit down) Why are you being so silent?

**EAC child** (who noticed that the care worker is trying to find out which exercise the child has to do for speech therapist) You have to look at this exercise.

Other behaviors with focus on other concern very low frequencies of cluster 1-1 'freeing and forgetting', cluster 1-2 'affirming and understanding', cluster 1-6 'belittling and blaming', and cluster 1-8 'ignoring and neglecting'.

Finally, no interpersonal behaviors with SASB cluster 1-3 ‘loving and approaching’, and cluster 1-7 ‘attacking and rejecting’ are observed with the children.
Both types of children compared in terms of SASB dimensions

Speaking in terms of the horizontal dimension (affiliation) of both SASB surfaces in figure 10 and 11, the degree of friendly versus hostile behavior is identified.

STR children in 61.7% show interpersonal behaviors in which there is a considerable amount of friendliness. In 5.1% STR children show a considerable amount of hostility, and in 33.2% they are neutral.

Almost the same degrees of friendly, hostile and neutral behaviors hold for EAC children. In 57.8% they show interpersonal behaviors with a considerable amount of friendliness. In 5.5% EAC children show a considerable amount of hostility, and in 36.7% they interact with neutral interpersonal behaviors.

These results seem to indicate that the children benefit from a predominantly pleasant atmosphere in the residential living units.

Low frequencies of truly hostile behaviors are shown, but note that children more frequently are hostile (about 5%) than care workers (about 1.5%).

Speaking in terms of the vertical dimension (interdependence) on SASB surface 2 with focus on self, the degree of separate or autonomy-taking versus submitting behavior is identified.

STR children show autonomy-taking behavior in 60.6%, whereas in 31.6% they show submitting behavior. EAC children show autonomy-taking behavior in 62.2%, whereas in 31.7% they show submitting behavior.

On SASB surface 1 with focus on other the vertical dimension represents the degree of autonomy giving versus controlling behavior.

STR children are autonomy-giving in 0.9%, whereas they are controlling in 5.4%. EAC children are autonomy-giving in 0.6%, whereas they are controlling in 4.2%.

In a very general way, it might be expected that STR children show more behaviors that are extreme on the interdependence dimension, whereas EAC children show more behaviors that are extreme on the affiliation dimension. However, this is not confirmed by the observations of the interpersonal behavior of the children, described in terms of the SASB dimensions. Differences between the two types of children in terms of SASB dimensions are very small.

In addition to this global comparison of the two types of children in terms of SASB dimensions, the interpersonal behaviors of the children are also compared according to the SASB clusters. The next section addresses this issue.

Testing of differences in SASB clusters between both types of children

Figure 12 shows again the relative frequencies of STR and EAC children's interpersonal behaviors, but now per SASB cluster side by side.
On describing the residential care process

FIGURE 12: The relative frequencies of the observed SASB clusters of children who are primarily provided with structure (STR) compared with those of children who receive primarily emotional and affective care (EAC).

As with the care workers, the similarities between the interpersonal behaviors of the two types of children are more prominent than the differences. The patterns of interpersonal behaviors of both types of children largely are comparable. With both types of children the same SASB clusters are observed to a large extent and the same to a lesser degree. Despite these similarities minor differences are noticeable. It is tested whether significant differences exist or not. Table 11 presents the results.

<table>
<thead>
<tr>
<th>Table 11: Differences between the observed interpersonal behaviors of STR children and those of EAC children. In each cell the frequency and the standard z-score is presented. Significant z-scores, z(0.01) &lt; -2.58 and z(0.01) &gt; +2.58, are bold.</th>
</tr>
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<tbody>
<tr>
<td>SASB clusters of children</td>
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<tr>
<td>---------------------------</td>
</tr>
<tr>
<td>STR</td>
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Note. STR = primarily provided with structure; EAC = primarily provided with emotional and affective care.

Table 11 demonstrates a statistical significance difference between STR and EAC children in their interpersonal behaviors towards the care workers $\chi^2(12, n = 14192) = 90.86, p = .000$. Interpreting the standard z-scores with an alpha level of 0.01, a significant difference is detected in 6 out of 13 possible interpersonal behaviors of the children. Note that the formula for computing these z-scores is presented in paragraph 3.6.
However, the effect size of this difference appears to be 0.006. The rules of thumb proposed by Cohen (1988), which define effect sizes of 0.1, 0.3, and 0.5 respectively as small, medium and large effects, are hardly needed to conclude that this is a very small effect. Due to the large sample size it still is significant.

Because of the large sample size and the small effect size of the difference between the two groups of children demonstrated by the chi-square test, the standard z-scores have to be interpreted with caution.

Concerning interpersonal behaviors with focus on self, STR children use significantly more cluster 2-4 ‘trusting and relying’ behaviors (z = +3.18) and more cluster 2-8 ‘walling off and distancing’ behaviors (z = +3.53), whereas EAC children use significantly more cluster 2-1 ‘asserting and separating’ (z = +4.28), cluster 2-5 ‘deferring and submitting’ (z = +3.86) and cluster 2-6 ‘sulking and scurrying’ (z = +3.45) behaviors.

Concerning interpersonal behaviors with focus on other the two types of children only on one cluster show a significant difference. STR children use significantly more cluster 1-5 ‘watching and controlling’ behaviors (z = +3.65).

A relevant question is whether these differences between interpersonal behaviors of children reveal characteristic differences between the two types of residential living units. To recall, children that are allocated to living units in which primarily structure (STR) is provided mainly show externalizing behaviors as in conduct disorder, attention deficit disorder, and hyperactivity. Children that are allocated to living units in which primarily emotional and affective care (EAC) is provided have experienced abuse, neglect, disrupted family relations, or other trauma. They show externalizing as well as internalizing behaviors, like overt and covert antisocial behaviors, social withdrawal, loneliness, depression, and anxiety.

Speaking in terms of SASB clusters, the findings are inconsistent. Some interpersonal child behaviors seem to be comprehensible, but others are less easy to interpret.

First, it was observed that children in STR units more frequently show ‘trusting and relying’ (cluster 2-4) behaviors. In the next paragraph it becomes apparent that STR children are not showing these cluster 2-4 behaviors more often than EAC children do as a reaction to any particular antecedent behavior of the care workers. This means that STR children in general are somewhat more asking questions and taking advice or guidance. An interpretation could be that STR children more than EAC children with friendly submissive behavior are asking for friendly control or structure.

Next it was demonstrated that STR children more frequently show the walling off and detaching behaviors of cluster 2-8, in which they hardly react to the care workers. On first thoughts this kind of behavior would seem more typical for EAC children with their problems of social withdrawal, loneliness, depression, and anxiety. However, being ahead of the sequences that will be described in the next paragraph, the current finding seems to be more comprehensible. It turns out that STR children more often angrily detach (cluster 2-8) because they do not accept guidance or advice of the care workers (cluster 1-4) or because they refuse to do what the care workers tell them to do (cluster 1-5). Thus, STR children more than EAC children are avoiding influence or control of the care workers. Note that cluster 2-8 behavior in principle provokes cluster 1-8 behavior, which is ‘ignoring and neglecting’. From that point of view showing cluster 2-8 behavior might be too risky for EAC children.
In addition, ‘asserting and separating’ behavior (cluster 2-1) is considered. Cluster 2-1 behaviors represent extreme autonomy-taking behavior and indicate minimal influenceability. Reviewing their problems, one might expect STR children to show this behavior more often than EAC children. But it was demonstrated that EAC children show this behavior more frequently. Also the opposite behavior of ‘asserting and separating’ (cluster 2-1), concerning ‘deferring and submitting’ (cluster 2-5) behavior, more frequently is shown by EAC children. EAC children more often submit to the care workers and do exactly as the care workers want. So contrary to what might be expected, EAC children instead of STR children show more behaviors that are extreme on the interdependency dimension.

Furthermore, one of the characteristics of children in EAC units appeared to be that they more often show hostile behaviors of cluster 2-6 (‘sulking and scurrying’). This means that they whine and unhappily protest. They do what the care workers want, but sulk and fume about it. This sounds as plausible behavior for children that need emotional and affective care.

Finally, it was observed that STR children more often than EAC children react by strong controlling behavior with focus on other (cluster 1-5, ‘watching and controlling’). This sounds as plausible behavior for children that suffer from externalizing problems.

5.3 Sequences of SASB clusters

This paragraph explores the one-step sequences of the children's interpersonal behaviors in terms of SASB clusters. It is described by which kind of interpersonal behaviors the children react to the different kinds of interpersonal behaviors of child care workers. This means that a review is presented of the consequent SASB clusters by which the children follow the different kinds of antecedent SASB clusters of the child care workers. The reactive interpersonal behaviors of both types of children are not only described, but also compared. This paragraph refers to subquestions 9 and 10 stated in paragraph 3.5.

Totals
In total 9729 one-step sequences are observed for STR children, whereas for EAC children in total 7590 one-step sequences are observed.

The total number of observed sequences is higher than the total number of observed frequencies of SASB clusters; for STR and EAC children respectively 8072 and 6120. As explained in the previous chapter, this is due to the fact that the SASB computer program FOLLOW counts transitions from each single element in a unit to each single element in the next unit.

Improvement of readability
For reasons of readability some restrictions are applied to the review of the sequences. Both the number of antecedent behaviors that are presented and the number of consequent behaviors that are presented are restricted.
First, as described in the previous chapter, child care workers show 12 different kinds of interpersonal behaviors in terms of the possible 16 SAS B clusters, with the emphasis on behaviors with focus on other. Out of this total of 12 different behaviors, the number of antecedent interpersonal behaviors of child care workers that is considered in the present section is restricted to eight. These eight behaviors concern all empirically present antecedents with focus on other (cluster 1-1 to cluster 1-8, with the exception of cluster 1-7) and the most frequently observed antecedent behavior of the child care workers with focus on self (cluster 2-1). Together they cover 95% of all care workers’ empirically found interpersonal behaviors.

Next, the number of consequent interpersonal behaviors of children that is described per antecedent behavior, is restricted to four, or exceptionally to five. So for each antecedent SAS B cluster the relative frequencies of the four or five most frequently observed consequent SAS B clusters are shown. Together these four or five consequent behaviors cover per antecedent at least 80% of all empirically found consequent behaviors.

Note that complete transitional frequency matrices for both types of children are presented in appendix E. Table E3 presents a transition matrix with absolute frequencies and horizontal percentages of all observed transitions for STR children and in table E4 the same is presented for EAC children.

Regarding the restrictions mentioned above, figure 13 presents the consequent behaviors of both types of children to eight different antecedent behaviors of the child care workers. Also for reasons of readability, figure 13 is split in figure 13A to 13H. In that way for each kind of antecedent behavior of the care workers there is a figure which shows the consequent behaviors of both STR and EAC children, and the accompanying explanatory text is close to each figure.

The consequent interpersonal behaviors of both types of children are not only described per antecedent behavior of the care workers, but also compared. By means of the chi-square test and standard z-scores it is tested whether there are significant differences between consequent behaviors. In appendix F in table F2 full test results of these comparisons are presented. In the next section only significant z-scores are presented. Note that the formula for computing these z-scores is presented in paragraph 3.6. Because of small effect sizes, the differences have to be interpreted with caution.

**First impressions about the children’s reactive behaviors**

Both types of children show various consequent behaviors to the different kinds of antecedent behaviors of the care workers, demonstrated as such in figure 13 as a whole. Also the fact that behaviors with focus on other (surface 1) of child care workers mainly are followed by behaviors with focus on self (surface 2) of the children is demonstrated.

Below per antecedent behavior of the care workers a description of the four or five most important reactions of both types of children is presented. Each description is accompanied with the test results of the comparisons between these reactions of both types of children.

As with the frequencies, also with these sequences the similarities between both types of children are more prominent than the differences. At the end of the chapter a summary is
provided in which similar sequences are put together and in which also the tiny differences in sequences between both types of children are put together.

Children’s reactions to cluster 1-1 of care workers

FIGURE 13A: The relative frequencies of the consequent SASB clusters of both STR (primarily structure) and EAC (primarily emotional and affective care) children by which they follow SASB cluster 1-1 as antecedent behavior of their child care workers.

No significant differences between both types of children are observed in their consequent behaviors to ‘freeing and forgetting’ (cluster 1-1) behavior of care workers, $\chi^2(8, n = 1291) = 11.39, p = .181$.

If child care workers leave their children free to do whatever they want (cluster 1-1), children in the first place go their own separate way apart from the care workers (cluster 2-1). This is a complementary interchange, since these behaviors have identical positions on the two different interpersonal surfaces. Both behaviors correspond in the amount of affiliation and interdependence.

In the second place children start expressing (cluster 2-2), and in the third place they start asking questions or asking permission (cluster 2-4).

In addition, when STR children are left on their own, they in the fourth place respond with very controlling behavior, like being very demanding and making the care workers follow their ideas (cluster 1-5), whereas EAC children in the fourth place give in and obey (cluster 2-5).
Children's reactions to cluster 1-2 of care workers

In reaction to the care workers’ ‘affirming and understanding’ behavior (cluster 1-2) children by far the most show ‘disclosing and expressing’ (cluster 2-2). This concerns a complementary interchange; the care workers are friendly and autonomy-giving, while the children are friendly and autonomy-taking.

Second, but to a much lesser degree, the children react by neutral separate or autonomy-taking behavior (cluster 2-1), meaning that they do their own thing, separately from the care workers. EAC children significantly more often show this reaction comparing to STR children, $\chi^2(8, n = 4773) = 41.78, p = .000, z = +4.15$. However, the overall effect size only is very small ($w = 0.009$).

Third, both types of children show friendly submitting behavior (cluster 2-4), in which they rely upon the care workers by asking something or taking guidance.

Fourth, the children show neutral submitting behavior (cluster 2-5), meaning that they exactly do what they think the care takers want them to do. STR children show this reaction significantly more often, $z = +4.73$.

FIGURE 13B: The relative frequencies of the consequent SASB clusters of both STR (primarily structure) and EAC (primarily emotional and affective care) children by which they follow SASB cluster 1-2 as antecedent behavior of their child care workers.
Children's reactions to cluster 1-3 of care workers

Figure 13C: The relative frequencies of the consequent SASB clusters of both STR (primarily structure) and EAC (primarily emotional and affective care) children by which they follow SASB cluster 1-3 as antecedent behavior of their child care workers.

Figure 13C shows diverse reactive behaviors of both types of children to 'loving and approaching' behavior (cluster 1-3) of the care workers.

STR children mainly respond complementary to 'loving and approaching' behavior (cluster 1-3) of the STR child care workers; they react by 'joyful connecting' (cluster 2-3), meaning that they are playful and happily keep in touch with the child care workers.

Next the STR children respond with behaviors represented by SASB clusters adjacent to cluster 2-3, namely 'disclosing and expressing' (cluster 2-2), 'trusting and relying' (cluster 2-4), and 'asserting and separating' (cluster 2-1).

In case EAC child care workers show 'loving and approaching' behavior (cluster 1-3), the EAC children first react by 'asserting and separating' (cluster 2-1). So if the care workers try to make bodily contact and invite the children to be in touch, the EAC children go their own separate way. EAC children show this reaction significantly more often comparing to STR children, $\chi^2(5, n = 170) = 16.77, p = .005, z = +3.20$. These results indicate that for EAC children it is less easily to be very close to their care workers. The overall effect size is small though ($w = 0.099$).
Only in the second place EAC children respond complementary by ‘joyful connecting’ (cluster 2-3), meaning that they are playful and happily keep in touch with the child care workers.

Finally the EAC children respond with behaviors adjacent to cluster 2-3, namely ‘trusting and relying’ (cluster 2-4) and ‘disclosing and expressing’ (cluster 2-2).

**Children’s reactions to cluster 1-4 of care workers**

![Consequences of children](image)

The most frequently observed antecedent behavior of both types of child care workers concerns ‘nurturing and protecting’ (cluster 1-4). Both types of children follow this first by ‘trusting and relying’ (cluster 2-4). According to the SASB model this is a complementary interchange: both participants to the interaction are friendly and the care worker is controlling while the child is submitting.

Secondly, the children respond to the friendly controlling behavior of the care workers with both neutral and friendly autonomy-taking behavior, respectively ‘asserting and separating’ (cluster 2-1), and ‘disclosing and expressing’ (cluster 2-2).

To a considerable lesser degree STR children wall off from the care workers friendly teaching or explaining (cluster 2-8). STR children have this reaction significantly more often
than EAC children do, $\chi^2(8, n = 5493) = 31.78, p = .000, z = +3.75$. In addition, EAC children to a considerable lesser degree, but significantly more often as STR children, give in to the care workers by ‘deferring and submitting’ (cluster 2-5), $z = +2.66$. Again, the overall effect size is very small ($w = 0.006$).

**Children’s reactions to cluster 1-5 of care workers**

![Consequences of children](image)

**FIGURE 13E:** The relative frequencies of the consequent SASB clusters of both STR (primarily structure) and EAC (primarily emotional and affective care) children by which they follow SASB cluster 1-5 as antecedent behavior of their child care workers.

In case care workers take charge of everything and make children follow rules (cluster 1-5), both types of children in the first place state their own position and know their own mind and do their own things (cluster 2-1). In almost one third of the times they do not accept the influencing behavior of the care workers. EAC children show this reaction significantly more often than STR children do, $\chi^2(8, n = 2235) = 29.56, p = .000, z = +2.63$, but the overall effect size is small ($w = 0.013$).

In the second place the children react complementary and indeed give in, submit to the care takers and follow the rules (cluster 2-5). So in almost one fourth of their reactions they do accept the care workers’ influencing behavior.

In the third place both types of children react friendly, either by friendly and autonomy-taking behavior (cluster 2-2), or by friendly and submitting behavior (cluster 2-4).
In the reactive behaviors that are observed less frequently, some significant differences between both types of children are observed. STR children more often react by cluster 1-5 ‘watching and controlling’, $z = +3.64$, meaning that the children and care workers are having a struggle for power. So whereas STR children more often try to control strong influence of the care workers, EAC children more often state their own separate position as a reaction to strong influence of the care workers.

As presented in appendix F in table F2, STR children also more often react by cluster 2-8 ‘walling off and distancing’, $z = +2.98$, meaning that they are trying to escape from the influencing care workers’ behavior by not reacting at all or detaching. This latter consequent behavior does not appear in the figure, since it is observed in very low frequencies, and only the four or five most frequently observed consequent behaviors are presented.

**Children’s reactions to cluster 1-6 of care workers**

![Diagram showing consequents of children's reactions]

**FIGURE 13F**: The relative frequencies of the consequent SASB clusters of both STR (primarily structure) and EAC (primarily emotional and affective care) children by which they follow SASB cluster 1-6 as antecedent behavior of their child care workers.

The next antecedent behavior of the care workers concerns hostile behavior. To hostile and controlling behaviors of the child care workers (cluster 1-6 ‘belittling and blaming’) both types of children in the first place react by ‘asserting and separating’ (cluster 2-1). So when
child care workers are angry and punish them, the STR children in the first place do the opposite of what the care takers want and go their own separate way.

Next the children follow with the complementary behavior ‘sulking and scurrying’ (cluster 2-6) or with ‘deferring and submitting’ (cluster 2-5), and furthermore with ‘disclosing and expressing’ (cluster 2-2) or ‘trusting and relying’ (cluster 2-4).

The chi-square test shows a significant difference, $\chi^2(7, n = 150) = 14.19, p = .048$. However, the overall effect size ($w = 0.095$) is small, and no z-score is significant at an alpha level of 0.01. Therefore, this difference is not further interpreted.

**Children’s reactions to cluster 1-8 of care workers**

**Consequents of children**

**Antecedent of care workers**

<table>
<thead>
<tr>
<th>STR</th>
<th>EAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-8</td>
<td></td>
</tr>
<tr>
<td>1-5</td>
<td>1-5</td>
</tr>
<tr>
<td>14.3%</td>
<td>6.8%</td>
</tr>
<tr>
<td>2-1</td>
<td>1-5</td>
</tr>
<tr>
<td>37.7%</td>
<td>39.2%</td>
</tr>
<tr>
<td>2-4</td>
<td>2-2</td>
</tr>
<tr>
<td>10.4%</td>
<td>13.5%</td>
</tr>
<tr>
<td>2-5</td>
<td>2-4</td>
</tr>
<tr>
<td>24.7%</td>
<td>16.2%</td>
</tr>
<tr>
<td></td>
<td>2-5</td>
</tr>
<tr>
<td></td>
<td>9.5%</td>
</tr>
</tbody>
</table>

FIGURE 13G: The relative frequencies of the consequent SASB clusters of both STR (primarily structure) and EAC (primarily emotional and affective care) children by which they follow SASB cluster 1-8 as antecedent behavior of their child care workers.

Hostile and autonomy-giving behaviors of the care workers (cluster 1-8, ‘ignoring and neglecting’) is first followed with ‘asserting and separating’ (cluster 2-1) by both types of children. So when care workers ignore them, the children continue with doing their own things.

Secondly, the children continue with asking questions (cluster 2-4). Probably they repeat questions they have asked before but were ignored.
In the third place, STR children continue with controlling behavior (cluster 1-5), in order to make the child care workers do what they want them to do, probably paying attention. EAC children in the third place react by friendly autonomy-taking behavior as in expressing (cluster 2-2). Probably they repeat expressings they expressed before but were ignored then.

In the fourth place STR children continue with friendly expressings (cluster 2-2), whereas EAC children react by very submitting behavior in 'deferring and submitting' (cluster 2-5).

No significant differences in these consequent behaviors are observed between the two types of children, $\chi^2(7, n = 151) = 10.80, p = .148$.

**Children's reactions to cluster 2-1 of care workers**

![Diagram showing the relative frequencies of consequent SASB clusters for STR and EAC children](image)

FIGURE 13H: The relative frequencies of the consequent SASB clusters of both STR (primarily structure) and EAC (primarily emotional and affective care) children by which they follow SASB cluster 2-1 as antecedent behavior of their child care workers.

'Asserting and separating' (cluster 2-1) is the most frequently observed care workers' antecedent behavior with focus on self, meaning that the care workers keep up their own autonomy because they are busy with the things they are working on. Both types of children follow this in the first place by doing their own things as well (cluster 2-1).

Secondly, children react by approaching the child care workers in a very friendly way, either by 'disclosing and expressing' (cluster 2-2), or by 'trusting and relying' (cluster 2-4).
To a lesser degree the children react with controlling behavior by making the care workers follow their demand for attention (cluster 1-5).

The chi-square test shows a significant difference, $\chi^2(8, n = 2387) = 20.38, p = .009$. However, the overall effect size ($w = 0.009$) is very small, and no z-score is significant at an alpha level of 0.01. Therefore, this difference is not further interpreted.

Testing of transition matrices
To determine whether the occurrence of certain transitions is significant or not, the complete transitional frequency matrix for each type of children is tested by means of the chi-square test and the standard z-scores with an alpha level of 0.01. Empty rows and columns are omitted from the transition matrix. The actual number of times each transition occurred is compared with the number of such transitions that would be expected if the behavioral events were ordered randomly. The expected value of each transition is generated by taking the base rate of both the antecedent and the consequent behavior into account. For each cell in the matrix the total number in its row is multiplied by the total number in its column and divided by the total number of transitions. Note that the formula for computing the z-scores is presented in paragraph 3.6. The z-scores of the complete matrices are presented in appendix E, table E3 and E4. These results are summarized in table 12. Table 12 presents only the significant transitions.

Recognizable interaction patterns
The transition matrices show that the interpersonal behaviors of STR children are associated with those of STR care workers, $\chi^2(144, n = 9729) = 2784.61, p = .000$. Also the interpersonal behaviors of EAC children are associated with those of EAC care workers, $\chi^2(144, n = 7590) = 2765.26, p = .000$ (see appendix E). In both transition matrices a considerable number of transitions is significant. This means that these transitions are observed more frequently than expected by chance (indicated by a '+'), or that they are observed less frequently than expected by chance (indicated by a '-').

What is more is that these significant transitions reveal recognizable patterns according to the SASB principles of complementarity, similarity, and antithesis. In table 12 these principles are visualized diagonally, which is schematized in the following diagram:
### TABLE 12:
Transition matrices with the antecedent SASB clusters of child care workers in rows and the consequent SASB clusters of children in columns, both in living units with primarily structure (STR) and with primarily emotional and affective care (EAC). A '+' marks significant transitions with $z(0.01) > +2.58$. A '-' marks significant transitions with $z(0.01) < -2.58$.

#### A: Antecedents of STR child care workers with consequents of STR children.

<table>
<thead>
<tr>
<th>Antecedent of care workers</th>
<th>Consequent SASB clusters of STR children</th>
<th>1-1</th>
<th>1-2</th>
<th>1-4</th>
<th>1-5</th>
<th>1-6</th>
<th>1-8</th>
<th>2-1</th>
<th>2-2</th>
<th>2-3</th>
<th>2-4</th>
<th>2-5</th>
<th>2-6</th>
<th>2-8</th>
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<tbody>
<tr>
<td>1-1</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>1-2</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td>-</td>
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<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>1-3</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>1-4</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>1-5</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>1-6</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>1-8</td>
<td></td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
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<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
</tbody>
</table>

#### B: Antecedents of EAC child care workers with consequents of EAC children.

<table>
<thead>
<tr>
<th>Antecedent of care workers</th>
<th>Consequent SASB clusters of EAC children</th>
<th>1-1</th>
<th>1-2</th>
<th>1-4</th>
<th>1-5</th>
<th>1-6</th>
<th>1-8</th>
<th>2-1</th>
<th>2-2</th>
<th>2-3</th>
<th>2-4</th>
<th>2-5</th>
<th>2-6</th>
<th>2-8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>+</td>
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<td>+</td>
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<tr>
<td>1-2</td>
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<td>-</td>
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<td>-</td>
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<tr>
<td>1-3</td>
<td></td>
<td>-</td>
<td>-</td>
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<td>+</td>
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<td>+</td>
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<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>1-4</td>
<td></td>
<td>-</td>
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<td>-</td>
<td>-</td>
<td>-</td>
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<td>+</td>
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<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
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<td>-</td>
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<td>-</td>
<td>-</td>
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<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>1-6</td>
<td></td>
<td>-</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td>+</td>
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</tr>
<tr>
<td>1-8</td>
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<td>+</td>
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<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
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<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
</tbody>
</table>

- Sequences concerning complementary behaviors
- Sequences concerning similar behaviors
- Sequences concerning antithetic behaviors
- Sequences with hostile behaviors as consequents
Reaction patterns according to the SASS principles of complementarity, similarity, and antithesis, which are presented in Table 12, are discussed at length below.

In addition, Table 12 also outlines hostile reactive behaviors of children. These are identified by means of boxing. Also these hostile consequent behaviors are discussed below.

On the basis of the split in behaviors with focus on other (focus 1) and behaviors with focus on self (focus 2) of both antecedents and consequents, Table 12 is divided into four quadrants.

From these quadrants the upper right quadrant shows the most significant sequences. That is because care workers largely show behaviors with focus 1, whereas children largely show behaviors with focus 2. The lower left quadrant shows significant sequences in which the care workers focus on self and the children focus on other. In these sequences there is a role reversal between children and care workers. The upper left quadrant and the lower right quadrant show sequences in which both members of the interaction dyad have the same focus. Behavior of a particular focus is not easily followed by another person with behavior with the same focus. Therefore, the upper left quadrant and the lower right quadrant are relatively empty and significant transitions mainly are observed less frequently than expected by chance.

Note that again the similarities between both types of children (Table 12A versus Table 12B) are more striking than the differences.

Complementarity
Table 12 demonstrates that nearly all complementary interchanges are significant in that they are observed more frequently than expected. As described before, the SASS principle of complementarity states that if a care worker approaches a child by focus on other there is a strong draw for this child to react by focus on self, and in addition there is a strong draw to show correspondence on the affiliation dimension and reciprocity on the interdependence dimension. A complementary relationship means a stable relationship (Benjamin, 1974, 1984).

If children show cluster 2-1 it relatively often follows cluster 1-1 of the child care workers; cluster 2-2 of the children relatively often follows clusters 1-2 of the care workers, and likewise, cluster 2-3 follows cluster 1-3, cluster 2-4 follows cluster 1-4, cluster 2-5 follows cluster 1-5, and cluster 2-6 follows cluster 1-6. The latter is a negative complementary sequence: 'sulking and scurrying' (2-6) as a reaction to 'belittling and blaming' (1-6). Although observed with a low frequency, EAC children relatively often show a second negative complementary interchange: cluster 2-8 'walling off and distancing' as a reaction to cluster 1-8 'ignoring and neglecting'.

It should be noted that a cloud of transitions less frequently observed than expected are surrounding the complementarity axis in the upper right quadrant, which makes the complementarity diagonal all the more striking.

In addition, if a care worker approaches a child by focus on self there is a strong draw for the child to react by focus on other, with correspondence on affiliation and reciprocity on interdependence. These sequences concern interchanges in which there is a role reversal.
between the children and the child care workers, since focus on other behaviors are defined as prototypical for adults and focus on self behaviors are defined as prototypically childlike.

Some of these complementary interchanges are significantly often observed, but note that these transitions are observed in low absolute frequencies (see appendix E, table E3 and E4). Cluster 1-2 of the children relatively often follows cluster 2-2 of the care workers and cluster 1-4 relatively often follows cluster 2-4. STR children also show cluster 1-5 relatively often as a reaction to cluster 2-5 of the care workers.

**Similarity**
The concept of similarity means that both participants to the interaction, so both the child and the care worker, assume the same position at the same time in the same interpersonal context (Benjamin, 1993).

Table 12 demonstrates one interpersonal interchange concerning similar behaviors that is significant for both types of children. Children relatively often react by 'asserting and separating' (cluster 2-1) to the care workers' 'asserting and separating' (cluster 2-1). This mostly is seen at the end of a series of interchanges when both members of an interaction dyad split up.

Table 12A demonstrates that STR children relatively often show 'disclosing and expressing' (cluster 2-2) after friendly expressings of child care workers (cluster 2-2). This often happens when a child and a care worker are playing a game together, for example a game of chess or table football, and both members of the interaction dyad are enthusiastic and try to win.

Finally, table 12A also demonstrates that 'nurturing and protecting' (cluster 1-4) of STR children less frequently than expected by chance constitutes a reaction to nurturing behavior (cluster 1-4) of STR care workers.

**Antithesis**
As described before, the SASB principle of antithesis is defined as the opposite to the complement of a specific behavior and it describes the behavior to be selected in order to change undesired behavior into more desired behavior (Benjamin, 1974, 1984). Since this is a therapeutic concept, it does not make sense to discuss it as such in relationship to child behavior. It is interesting though to evaluate antithetic child behaviors in order to get understanding about how children take an active part in shaping social interactions with their care workers.

Table 12 shows seven significant sequences that regard antithetic behaviors, of which some antithetic behaviors are observed significantly more frequent than expected, while others are observed significantly less frequent than expected.

Children relatively often show 'watching and controlling' (cluster 1-5) as an antithetic reaction to the care workers 'asserting and separating' (cluster 2-1) behavior. In case the care workers keep up their own autonomy and do their own things, the children relatively often react by demanding behavior in that they try to make the care worker follow their rules. This interchange is also seen in the reverse way. Children relatively often show 'asserting and separating' (cluster 2-1) as an antithetic reaction to the care workers 'watching and
controlling’ (cluster 1-5) behavior. In case the care workers try to make the children follow their rules, the children relatively often react by keeping their own separate position.

In addition, children relatively often show ‘belittling and blaming’ (cluster 1-6) as an antithetic reaction to friendly expressings (cluster 2-2) of the care workers. However, this is observed only five times with STR children and only four times with EAC children.

According to table 12A STR children relatively often show ‘wallowing off and distancing’ (cluster 2-8) as an antithetic reaction to the care workers behavior of ‘nurturing and protecting’ (cluster 1-4). This indicates that STR children not always like the friendly teaching or care taking behavior because they react in a hostile way by detaching from their care workers.

Antithetic behaviors of children that are observed significantly less frequent than expected are the following. ‘Disclosing and expressing’ (cluster 2-2) is friendly child behavior that relatively rarely is shown after hostile behavior of care takers in ‘belittling and blaming’ (cluster 1-6). In addition, neutral and hostile submitting child behavior (cluster 2-5 and 2-6) relatively rarely constitutes a reaction to neutral and friendly autonomy-giving behavior (respectively cluster 1-1 and 1-2) of the care workers.

Hostile sequences
As the last section of this paragraph about the one-step sequences of the children's interpersonal behaviors, sequences with hostile consequent behaviors of children are taken into consideration. Children not very often show behaviors with a considerable amount of hostility, but in case they do these mostly constitute reactions to neutral and hostile behaviors of the care workers.

Hostile submitting child behavior in ‘sulking and scurrying’ (cluster 2-6) relatively often follows neutral and hostile controlling behaviors of the care workers, respectively ‘watching and controlling’ (cluster 1-5) and ‘belittling and blaming’ (cluster 1-6). This means that in case children whine and unhappily protest this mostly happens because the care workers are telling them exactly what to do or are blaming them.

Hostile autonomy-taking child behavior in ‘wallowing off and distancing’ (cluster 2-8) is by both types of children relatively often shown as a reaction to neutral controlling behaviors in ‘watching and controlling’ (cluster 1-5) of the care workers.

In addition, STR children also relative show cluster 2-8 behaviors after care workers’ hostile and controlling behaviors in ‘belittling and blaming’ (cluster 1-6), or as an antithetic reaction to cluster 1-4 ‘nurturing and protecting’ of STR care workers.

On the other hand, EAC children relatively often show cluster 2-8 as a complementary reaction to hostile autonomy-giving behavior in ‘ignoring and neglecting’ (cluster 1-8) of EAC care workers.

Thus, if STR children angrily detach this mostly happens because the care workers are telling them exactly what to do or are blaming them, or because they do not accept guidance or advice of the care workers. If EAC children angrily detach this mostly happens because the care workers are telling them exactly what to do or when the care workers are ignoring them.
Both types of children not very often show hostile behavior with focus on other. Sometimes they are ‘ignoring and neglecting’ (cluster 1-8). If they show this behavior, it relatively often follows neutral and autonomy-taking behavior (cluster 2-1 ‘asserting and separating’) of the child care workers in busy situations in the residential living unit. So children tend to ignore the fact that care workers are busy with the things they are working on.

In addition, children not very often show ‘belittling and blaming’ (cluster 1-6), but if they do they blame interpersonal behaviors in which the care workers express their own thoughts and feelings (cluster 2-2). STR children also seem to blame their care workers when the care workers are ignoring them (cluster 1-8), whereas EAC children seem to blame their care workers when they are walling off. However, appendix E, table E3 and E4, demonstrate that these transitions are observed only occasionally.

Finally, table 12 demonstrates that both types of children show hostile consequent behaviors less than expected after ‘asserting and separating’ (cluster 2-1) behavior of the care workers. So, if care workers have to do their own things, the children do not get angry and are not detaching.

5.4 SASB complex messages

Once complex communication comes up there is more than one SASB cluster needed to accurately represent the process in an interpersonal utterance. In order to describe complex communication all interpersonal behaviors that capture two inextricable messages are reviewed. The present paragraph describes what kinds of complex messages children show in relation to child care workers. This refers to subquestion 11 stated in paragraph 3.5. In addition, it is explored whether there are differences between the complex messages of both types of children. This refers to subquestion 12 stated in paragraph 3.5.

Totals

In total 1544 elements from children in relation to child care workers are indicated as complex messages. From STR children 901 elements are coded as complex messages, which is 11.2% of all their interpersonal behaviors. From EAC children 643 elements (10.5%) are coded as complex messages.

The absolute and relative frequency of the observed complex messages of both types of children is shown in table 13.

Testing of differences in complex codes between both types of children

By means of the chi-square test and standard z-scores (computed according to the formula presented in paragraph 3.6) it is tested whether there are significant differences in complex codes between both types of children. Only complex codes that have been shown with an absolute frequency of at least 10 by one (or both) type(s) of children are involved in the test. The remaining complex codes are pooled together in the category ‘other’.
The result of the chi-square test shows a significant difference in complex codes between both types of children, $\chi^2(16, n = 1544) = 67.83, p = .000$. Comparable to the testing of differences in frequencies and sequences between the two groups of children, a small effect size is found, $w = 0.044$. Again significant z-scores have to be interpreted with caution.

**TABLE 13:**
Absolute and relative frequencies, and standard z-scores of SASB complex messages of both types of children in relation to their care workers ($n = 1544$). Significant z-scores, $z(0.01) < -2.58$ and $z(0.01) > +2.58$, are bold.

<table>
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<tr>
<th>Complex code</th>
<th>STR children</th>
<th>EAC children</th>
</tr>
</thead>
<tbody>
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<td></td>
<td>$n$</td>
<td>%</td>
</tr>
<tr>
<td>2-1 + 2-4</td>
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</tr>
<tr>
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<td>93</td>
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<td>17</td>
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</tr>
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<td>1.6</td>
</tr>
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<tr>
<td>total</td>
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<td>100</td>
</tr>
</tbody>
</table>

$X^2 = 67.83$, $df = 16$, $p = .000$, $n = 1544$ |

**Note.** STR = receive primarily structure; EAC = receive primarily emotional and affective care.

**Most frequently observed complex messages**
Complex messages that are shown most often by both types of children concern neutral and very autonomy-taking behavior (cluster 2-1) together with submitting behavior. This submitting behavior is either friendly (cluster 2-4), or neutral (cluster 2-5), or hostile (cluster 2-6). In total, these complex messages constitute 53.9% of all complex behaviors of STR children and 60.7% of all complex behaviors of EAC children.
In case of ‘asserting and separating yet trusting and relying’ (cluster 2-1 + 2-4) the children know their own mind or do their own things and at the same time they submit to the care worker in a friendly way. For example:

STR child: Please, no, I don't want to brush my teeth now, you promised us another cookie, please?
EAC child: (asking for the third time) Can I have the keys please?

In case of 'asserting and separating yet deferring and submitting' (cluster 2-1 + 2-5) the children do their own separate thing and at the same time they do what the care workers want them to do. It is more frequently shown by EAC children, $z = +3.40$. According to the SASB model this is defined as *ambivalence*, since it concern opposite behaviors with focus on self (Benjamin, 1984). For example:

STR child: (as a reaction to a child care worker who is telling him that he should stop and go to do things for himself) I don't want to and at the same time he turns around and takes his comic book.
EAC child: (after a care worker told the boy to stop using his teeth to grab the cable of his loudspeaker because this is bad for his teeth) The boy drops the cable while saying: So what?

In case of 'asserting and separating yet sulking and scurrying' (cluster 2-1 + 2-6) the child angrily tries to defend himself in order to avoid the care workers disapproval yet simultaneously wants to do the opposite of what the care worker wants. For example:

STR child: (as a reaction to a care worker who is explaining why a trainee care worker is going to give him guidance and with much anger in his voice) I don't want any guidance...it is okay if you send him to check me out when I'm done.
EAC child: (crying and with anger in his voice and his head down) You never ever allow me to do something and now I am going to do it.

In addition, both types of children show complex messages in which they focus on the care worker by neutral controlling behavior (cluster 1-5) and at the same time show one of the interpersonal behaviors with focus on self (cluster 2-1, 2-2, 2-3, 2-4, 2-5, 2-6).

In case of 'watching and controlling yet disclosing and expressing' (cluster 1-5 + 2-2) children show neutral controlling behavior together with friendly autonomy-taking behavior. An example of a STR child is:

STR child: (who notices that the care worker is on her way to the kitchen) Beautiful new shoes hah! Meanwhile he puts his leg up to stop the care worker.

An example of an EAC child is: a child is playing Santa Claus and is carrying a wooden staff around. Because nails stick into the wood, the care worker tells the child to put the staff down. The child answers with a deep voice (like the old Santa Claus):

EAC child: I need a staff, you kid....

'Watching and controlling yet joyfully connecting' (cluster 1-5 + 2-3) only is observed with STR children ($z = +3.80$). In this case the child is having a playful romp with the care worker, but at the same time this is a 'struggle' for power.

In case of 'watching and controlling yet trusting and relying' (cluster 1-5 + 2-4) children show neutral controlling behavior together with friendly submitting behavior in. STR children do this more often, $z = +3.62$. They ask for something and at the same time press for it. For example:

STR child: Can I have the answer now?!
EAC child: Please, give that keys to me now?!
'Watching and controlling yet sulking and scurrying' (cluster 1-5 + 2-6) more often is observed with EAC children ($z = +3.33$). In this case the children are very demanding and at the same time they show hostile submitting behavior, in which they are whining and trying to defend themselves.

Furthermore, both types of children show the complex message 'disclosing and expressing yet deferring and submitting' (cluster 2-2 + 2-5). In this case the children express their thoughts or feelings in a friendly way and at the same time follow a rule about how things should be done. For example:"EAC child: (as a reaction to a care worker’s order to stop running through the living room). The boy slows down and simultaneously says: I am going to play with my gameboy.

It is stated already that opposite behaviors on SASB surface 2 with focus on self are defined as ambivalence. Two more of these ambivalent complex messages are observed.

First, ‘disclosing and expressing yet sulking and scurrying’ (cluster 2-2 + 2-6). Friendly autonomy-taking behavior is bound to hostile submitting behavior. An example is a boy who tries to convince the care worker that he is able to go to the library all by himself.

EAC child: The boy is dancing around the table and almost smiling and at the same time complaining:
But yesterday we also went to the library and came back in time...

Second, ‘trusting and relying yet walling off and distancing’ (cluster 2-4 + 2-8). Friendly submitting behavior is bound to hostile autonomy-taking behavior. An illustration is a child who is trying to hide sadness behind anger:

EAC child: (with hostility in her voice) I am leaving! (while she remains sitting on her bed and looks depressed).

Also remarkable are the complex messages of 'ignoring and neglecting yet trusting and relying' (cluster 1-8 + 2-4) and 'ignoring and neglecting yet disclosing and expressing' (cluster 1-8 + 2-2). This implies that the child asks a question (cluster 2-4) or expresses some thoughts or feelings (cluster 2-2) without taking into account (cluster 1-8) that the care worker is a busy situation and has no time to pay attention to the child.

One more noticeable complex message of the children concerns 'asserting and separating yet joyfully connecting' (cluster 2-1 + 2-3). EAC children show this more often than STR children ($z = +2.59$). It means that a child is very close to the care worker and has bodily contact with the care worker, but at the same time firmly states his or her own separate position. This might indicate that it is harder for EAC children to dedicate themselves totally to relaxed and joyful bodily contact.

**Sequences of complex messages**

An interesting question is whether complex messages of children provoke complex messages with child care workers or not. Due to the fact that the SASB computer program FOLLOW, which traces one-step sequences, ignores whether the reported clusters are part of complex communication (see paragraph 3.6), the answer to this question can be explored only briefly.

The complex messages of STR children compel child care workers to behave complex in 19.8%, whereas in 77.8% these complex messages provoke single interpersonal behaviors. In 2.3% complex messages of STR children show up at the end of a series of interchanges.
The complex messages of EAC children compel child care workers to behave complex in 15.7%, whereas in 82.0% these complex messages provoke single interpersonal behaviors. In 2.3% complex messages of EAC children show up at the end of a series of interchanges.

5.5 Differences between individual children

Although differences between both types of children are significant, these differences are rather small and therefore they have to be interpreted with caution. Similarities between both types of children are more prominent than differences. This conclusion raises the question whether differences exist between individual children, without regard to the type of care they receive.

Table 14 presents differences between individual children. Firstly, these differences are tested for significance by means of the chi-square test and standard z-scores (computed according to the formula presented in paragraph 3.6). The results are shown in table 14A. Secondly, the behavioral repertoire of each single child, that is the relative frequencies of his or her observed interpersonal behaviors, are presented. Table 14B shows these relative frequencies and for reasons of readability a summary of these relative frequencies is presented in table 14C.

Individual children compared with one another

It is tested whether significant differences between individual children exist or not. Results are demonstrated in table 14A.

Table 14A shows a statistical significant difference between interpersonal behaviors of individual children, $\chi^2(184, n = 14192) = 1320.91, p = .000$. By interpreting the standard z-scores with an alpha level of 0.01, it is possible to draw conclusions about interpersonal behaviors that characterize individual children compared to the other children. These briefly are described in terms of the SASB dimensions:

- Children 1 and 3 relatively often show behavior with focus on other and also sulking behavior.
- Children 2 and 4 are characterized by controlling behavior.
- Children 5 and 10 relatively often show friendly submissive behavior.
- Children 7, 9, 13, and 17 relatively often are on their own or walling off.
- Children 8, 11, and 14 relatively often show friendly behaviors, both friendly separate and friendly submissive behavior.
- Child 12, 19, 23, and 24 are very submissive children, whereas children 6 and 16 relatively rarely are submissive.
- Child 15 relatively often shows behavior with focus on other and also friendly submissive behavior.
- Child 20 relatively often is expressing but also sulking.
- Child 22 is characterized by neutral separate but also by neutral submissive behavior.
On describing the residential care process

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$X^2 = 1320.91$, $df = 184$, $p = .000$, $n = 14192$

Note. STR = primarily structure is received; EAC = primarily emotional and affective care is received.

Magnitude of the differences

Children are allocated to one of the two types of residential treatments depending on their characteristics and needs. Therefore, it seems reasonable to believe that differences between interpersonal behaviors of the children reveal characteristic differences between the two types of residential living units. So far it was concluded that differences between children of the two types are rather small. On top of that, significant differences are found between individual children, without regard to the types of care they receive.
The next issue is whether or not differences between individual children are as strong as differences between the two types of children. The solution to this issue is found by means of calculating the values of the Cramer's phi. Cramer's phi measures the degree of association between two sets of observations (Siegel and Castellan, 1988).

To estimate the magnitude of the differences between individual children, Cramer's phi was calculated for all \(\binom{24}{2} = 276\) pairs of children. The mean phi is 0.19, which represents a weak association. This indicates that in daily life situations the interpersonal behaviors of all individual children are quite similar, regardless of the type of care they are allocated to.

Next, the mean phi of the homogeneous pairs (i.e., pairs of STR children and pairs of EAC children) is compared with the mean phi of heterogeneous pairs (i.e., pairs of one STR and one EAC child). The mean values are as follows:
- mean phi of homogeneous pairs (STR) = 0.20;
- mean phi of homogeneous pairs (EAC) = 0.16;
- mean phi of heterogeneous pairs (STR and EAC) = 0.19.

These results indicate that according to SASB measurement the average similarity in observed interpersonal behavior between two children that both are from the STR group or both from the EAC group is almost the same as the average similarity between a member of the STR group and a member of the EAC group. Apparently, the two specific residential treatment approaches to which the children are allocated can not be distinguished by characteristics of interpersonal behaviors of these children in everyday situations in the living units.

**Behavioral repertoire of each individual child**

In addition, the main characteristics of the behavioral repertoire of each individual child are described. For each single child the relative frequencies of the observed interpersonal behaviors are presented. Table 14B shows per child per SASB cluster the relative frequencies, which are horizontal percentages. In the table it is highlighted which four SASB clusters each child most frequently shows. Together these four SASB clusters cover per child at least 80% of all their interpersonal behaviors.

Table 14B demonstrates that for all children the same three kinds of SASB clusters are the interpersonal behaviors by which they interact the most, namely 'asserting and separating' (cluster 2-1), 'disclosing and expressing' (cluster 2-2), and 'trusting and relying' (cluster 2-4). There are differences between (groups of) children in the order of these interpersonal behaviors as first, second, and third most frequently observed behaviors. Also in their remaining behaviors the children differ from each other, especially in the amount of behaviors with focus on other, and neutral and hostile behaviors with focus on self (cluster, 2-5, 2-6, and 2-8).
TABLE 14B:
The relative frequencies of the SASB clusters of each single child. In each row the most frequently observed SASB cluster is boxed, the second one printed in bold, the third one is underlined, and the fourth one is printed in italics.

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</tbody>
</table>

Note. STR = primarily structure is received; EAC = primarily emotional and affective care is received.

In order to clarify the picture that is presented in table 14B, table 14C is prepared. Concerning all 24 children, in table 14C children that demonstrate comparable behavioral styles are grouped together, thus without regard to the type of care they are provided. Per child only the four most frequently observed interpersonal behaviors are included in the table.
### TABLE 14C:

*Per child the four most frequently observed SASB clusters. In each row the most frequently observed SASB cluster is marked with ****, and the second, third, and fourth one are marked with respectively ***, **, and *.*

<table>
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<tr>
<th>SASB clusters</th>
<th>1-1,1-2</th>
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<th>2-1</th>
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<td></td>
<td>STR 2</td>
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<td>EAC 15</td>
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<td>STR 5</td>
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<td>STR 10</td>
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</tbody>
</table>

*Note. STR = primarily structure is received; EAC = primarily emotional and affective care is received.*

Table 14C first demonstrates a group of children (the upper eleven children) who first show friendly expressings (cluster 2-2), and in the second place are on their own (cluster 2-1), and in the third place show friendly submitting behaviors (cluster 2-4). In addition to that:

- the upper six children, all STR children, show different kinds of behavior with focus on other;
- whereas the other five children, all EAC children, show submissive behaviors with focus on self (cluster 2-5, and cluster 2-6).
Next, a group of children first show friendly expressings (cluster 2-2), and in the second place are trusting and relying (cluster 2-4), and in the third place are on their own (cluster 2-1). In addition to that:

- children 11, 12, and 18 show very submissive behaviors (cluster 2-5);
- child 8 shows loving and approaching behavior (cluster 2-3);
- children 2, 15, and 16 show behaviors with focus on other.

Furthermore, there is a group of children (children 9, 22, and 23) who in the first place do their own things (cluster 2-1), secondly show friendly expressings (cluster 2-2), and thirdly show friendly trusting and relying behavior (cluster 2-4). In addition to that they interact with submissive behavior, either neutral (cluster 2-5) or hostile (cluster 2-6).

Child 13 is the only child that puts friendly expressings (cluster 2-2) just in the third place and not in the first or second place, as all the other children do. This child 13 firstly shows very separate behavior (cluster 2-1), and secondly shows friendly trusting and relying (cluster 2-4).

Finally, two children show in the first place friendly trusting and relying (cluster 2-4) behavior, in the second place friendly expressings (cluster 2-2), and in the third place neutral separate behavior (2-1). In addition to that one child adds behavior with focus on other, whereas the other child adds very submissive behavior (cluster 2-5).

5.6 Summary

In the current chapter interpersonal behaviors of children in residential care were characterized. Two different treatment approaches were therewith compared: residential living units with the emphasis on providing structure (STR) and living units with the emphasis on providing emotional and affective care (EAC). The similarities between interpersonal behaviors of both types of children turned out to be far more prominent than the differences.

In this paragraph the observed interpersonal behaviors of children respecting their frequencies, sequences and complex messages are summarized. This summary, together with the summary of the previous chapter, is presented as an answer to the central research question. Firstly, patterns of interpersonal behaviors that appeared to be similar to both STR and EAC children are systematically put together. Secondly, patterns of interpersonal behaviors that represent tiny differences are systematically put together.

Characteristics of children’s interpersonal behaviors

SASB dimensions

Interpersonal behaviors of children, characterized in terms of the three SASB dimensions (focus, affiliation, and interdependence):

- Children mainly show interpersonal behaviors with focus on self, meaning that they mostly are concerned with what is going to be done to or for themselves.
- In almost two thirds of all their interpersonal behaviors they show truly friendly behaviors.
• In about one third of all their interpersonal behaviors they show neutral (not friendly, not hostile) behaviors.
• Only low frequencies of *truly hostile* behaviors are shown (about 5%), but children are more frequently hostile than care workers.
• In almost two thirds of all their interpersonal behaviors they show *autonomy-taking* behavior.
• In about one third of all their interpersonal behaviors they are *submitting*.

**SASB clusters**
Interpersonal behaviors of children, characterized in terms of SASB clusters:
• The most of all SASB clusters they show 2-2 *disclosing and expressing* (± 30%).
• Also to a substantial degree they show cluster 2-1 *asserting and separating* and cluster 2-4 *trusting and relying* (each ± 25%).
• To a much lesser extent they show cluster 2-5 *deferring and submitting* (± 5%).
• Also to a small extent they show cluster 1-5 *watching and controlling*, cluster 2-3 *joyfully connecting*, cluster 2-6 *sulking and scurrying*, and cluster 2-8 *walling off and distancing* (each ± 2%).
• They show hardly any cluster 1-1 *freeing and forgetting*, cluster 1-2 *affirming and understanding*, cluster 1-4 *nurturing and protecting*, cluster 1-6 *belittling and blaming*, and cluster 1-8 *ignoring and neglecting* (each < 1%).
• And they never show cluster 1-3 *loving and approaching*, cluster 1-7 *attacking and rejecting*, and cluster 2-7 *protesting and recoiling*.

**Sequences**
Especially from the sequences it becomes clear that children take an active part in shaping the interactions with their care workers. The interpersonal behaviors of children are linked with those of care workers into recognizable patterns.

On one hand, by describing patterns of antecedent behaviors of care workers and consequent behaviors of children, it is explicated what the most likely ways are of moving from one behavior to another. It describes what interaction patterns commonly can be seen in the residential living units.

On the other hand, by testing which patterns of antecedent behaviors of care workers and consequent behaviors of children occur more often than expected by chance, it is explicated which behaviors of children are truly associated with those of care workers.

Interaction patterns, characterized in terms of commonly observed sequences are the following:
• When care workers let the children free (1-1), the children mainly react by separating and doing their own things (2-1), and furthermore by expressing (2-2), or by asking questions or guidance (2-4).
• When care workers are affirming and understanding towards the children (1-2), the children mainly by far the most frequently react by expressing (2-2), and furthermore by asking questions or guidance (2-4), or by separating (2-1).
• When care workers are loving and approaching the children (1-3), the children mainly show reactive love (2-3), separating behavior (2-1), expressings (2-2), or they react by asking questions or taking guidance (2-4).
- When care workers are nurturing and teaching the children (1-4), the children mostly react by trusting and taking guidance (2-4), and furthermore by asserting and separating (2-1), or by expressing behavior (2-2).
- When care workers are very controlling and set the rules (1-5), the children mostly react by asserting and separating (2-1) and somewhat less by submitting and following the rules (2-5); and furthermore by friendly behaviors in expressings (2-2) and asking questions or guidance (2-4).
- When care workers show hostile belittling and blaming (1-6) towards the children, the children mainly react by asserting and separating (2-1), and furthermore by hostile sulking (2-6), submitting and following the rules (2-5), asking questions or guidance (2-4), or by expressings (2-2).
- When care workers show hostile ignoring and neglecting (1-8) towards the children, the children mainly react by asserting and separating (2-1), and furthermore by asking questions or guidance (2-4) and expressings (2-2), or by submitting and following the rules (2-5) or by demanding and controlling behavior (1-5).
- When care workers are separating and do their own things (2-1), the children by far the most react by also separating and doing their own things (2-1), and furthermore they react by expressings (2-2), or by asking questions or guidance (2-4).

SASB structural principles
Patterns of antecedent behaviors of care workers and consequent behaviors of children that occur more often than expected by chance explicate which behaviors of children are truly associated with those of care workers. These patterns are described according to the SASB principles of complementarity, similarity, antithesis, and hostility.

- **Complementary** interaction patterns structure a great deal of the interpersonal behaviors of children and care workers. This counts for both positive and negative complementarity, but positive complementarity is far more prominent. Often occurring positive complementary interchanges are 1-1/2-1, 1-2/2-2, 1-3/2-3, 1-4/2-4, and 1-5/2-5. Less occurring negative complementary interchanges are 1-6/2-6, and 1-8/2-8.
- The principle of **similarity** is mostly demonstrated as both children and care workers reacting by asserting and separating, and both doing their own things (2-1), which often is seen when child and care worker and split up at the end of a series of interchanges.
- According to the principle of **antithesis** children show neutral controlling behavior (1-5) as a reaction to neutral separate behavior of the care workers (2-1). By being controlling and demanding the children demonstrate that they not accept that care workers are doing their own things and the children try to make the care workers do what they want them to do.
- Also according to the principle of **antithesis** children show neutral separate behavior (2-1) as a reaction to neutral controlling behavior of the care workers (1-5). By doing the opposite of what the care workers want them to do, the children try to reach that they can do the things they prefer.
- Again according to the principle of **antitheses** children show hostile blaming (1-6) as a reaction to expressings of the care workers (2-2).
- Children not very often show hostile sulking (2-6), but if they do it mostly constitutes a reaction to very controlling behaviors (1-5), or to hostile blaming behaviors (1-6) of the care workers. So children whine and unhappily protest mostly because care workers are telling them exactly what to do or blame them.
• Children not very often show hostile walling off and distancing behavior (2-8), but if they do it mostly constitutes a reaction to very controlling behaviors (1-5) of the care workers. So children angrily detach mostly because care worker are telling them exactly what to do.
• Children not very often show hostile ignoring behavior (1-8), but if they do they mostly ignore that the care workers are doing their own things (2-1).

SASB complex messages
About ten percent of all the interpersonal behaviors of children are characterized as SASB complex messages. These consist:
• mostly of a combination of asserting and separating and submitting behavior with focus on self (together ± 50%), meaning that they partly are doing their own things and partly are giving in to the care workers;
• also to a substantial degree of a combination of watching and controlling, so very demanding behavior, with some interpersonal behavior with focus on self (together ± 20%);
• and to a substantial degree of disclosing and expressing yet deferring and submitting (± 10%), in which they express their thoughts and at the same time follow a rule about how things should be done.

Tiny differences between two types of children
The interpersonal behaviors of children who are provided structure (STR) and children who are receiving emotional and affective care (EAC) appeared to be largely comparable. The effect sizes of all statistically significant differences between the children of the two treatment approaches appeared to be very small (always smaller than 0.1). Therefore, these differences between the two types of children are of marginal importance and are subordinate to the similarities.

In order to provide an overview of the tiny differences, they systematically are put together below.

SASB clusters
In terms of SASB clusters the following differences are observed:
• STR children use more cluster 1-5 watching and controlling, cluster 2-4 trusting and relying, and cluster 2-8 walling of and distancing.
• EAC children use more cluster 2-1 asserting and separating, cluster 2-5 deferring and submitting, and cluster 2-6 sulking and scurrying.

Sequences
Concerning the observed care worker / child interaction patterns, the following differences are shown:

STR children:
• more often show very submitting behavior (2-5) after they were affirmed (1-2) by the care workers;
• more often are walling off (2-8) after care workers’ nurturing or teaching behavior (1-4);
• more often are walling off (2-8) after care workers were controlling and tried to make them follow the rules (1-5).
• more often are demanding and controlling (1-5) after care workers were controlling and tried to make them follow the rules (1-5);

EAC children:
• more often assert and separate themselves (2-1) after care workers showed affirming and understanding (1-2);
• more often assert and separate themselves (2-1) after care workers showed loving and approaching (1-3);
• more often assert and separate themselves (2-1) after care workers were controlling and tried to make them follow the rules (1-5);
• more often show deferring and submitting behavior (2-5) after care workers have been nurturing or teaching them (1-4).

SASB structural principles
A few differences in terms of the SASB principles of complementarity, similarity, antithesis, and hostility are observed. The following patterns, which are observed with an absolute frequency of ten or more, are shown more frequently than expected by chance by STR children, whereas EAC children do not show these more often than expected by chance.
• According to the principle of similarity STR children show disclosing and expressing (2-2) more often than expected by chance as a reaction to disclosing and expressing (2-2) of care workers. This mostly happens when they are playing some game together.
• According to the principle of antithesis STR children show walling off and distancing (2-8) more often than expected by chance as a reaction to nurturing and teaching (1-4) of the care workers, meaning that the children try to avoid the friendly lessons of the care workers.

SASB complex messages
Concerning differences in complex messages, it is demonstrated that STR children more frequently show the complex messages of:
• SASB clusters 1-5 + 2-3, in which they have a playful romp and at the same time have a struggle for power with the care workers;
• SASB clusters 1-5 + 2-4, in which they ask for something and at the same time press for it.

EAC children more frequently show the complex messages of:
• SASB clusters 2-1 + 2-3, in which they are joyful and have bodily contact with the care worker, but at the same time firmly state their own separate position.
• SASB clusters 2-1 + 2-5, in which they are ambivalent because they do their own separate thing and at the same time do what the care workers want them to do.
• SASB clusters 1-5 + 2-6, in which they are very demanding and at the same time they show hostile whining and try to defend themselves.

Differences between individual children
Differences between individual children are not larger in case they represent a different type of care. The two specific residential treatment approaches to which the children are allocated
can not be distinguished by characteristics of interpersonal behaviors of these children in everyday situations in the living units.

All children most frequently interact with the same three kinds of interpersonal behaviors, namely ‘asserting and separating’ (cluster 2-1), ‘disclosing and expressing’ (cluster 2-2), and ‘trusting and relying’ (cluster 2-4). But the children differ in the order in which they put these interpersonal behaviors as first, second, or third. Also in their remaining behaviors the children differ from each other, especially in the amount of behaviors with focus on other, and in the amount of neutral and hostile behaviors with focus on self (cluster, 2-5, 2-6, and 2-8).